CLAIMS

What is claimed is:

1. A method for capturing and processing physical data to show discrete defects found within a target object, the method comprising the steps of:

a) providing a vehicle, including:

i) a sensor, mounted to the vehicle, designed and configured to record a continuous stream of data as the vehicle moves relative to the target object;

ii) a global positioning system recorder, mounted to the vehicle, designed and configured to record geo-spatial data regarding the target object and vehicle;

b) downloading the continuous stream of data and the geo-spatial data to a data processing system;

c) creating, using the data processing system, a digitally reduced data stream, including at least one piece of discrete data from the continuous stream of data; and

d) associating the geo-spatial data to the digitally reduced data stream so that each piece of discrete data maintains a specific geo-spatial location.

2. The method of claim 1, wherein the target object is a power transmission corridor.

3. The method of claim 1, wherein the target object is a pipeline.

4. The method of claim 1, wherein the target object is a railway.

5. The method of claim 1, wherein the target object is a roadway.

6. The method of claim 1, wherein the target object is a watershed.

7. The method of claim 1, further comprising the step of creating a database containing the associated geo-spatial data and digitally reduced data stream.

8. The method of claim 1, wherein the data processing system is located remotely from the vehicle.

9. The method of claim 1, wherein the sensor is a wide field of view camera.

10. The method of claim 1, wherein the sensor is a medium field of view camera.

11. The method of claim 1, wherein the sensor is a narrow field of view camera.

12. The method of claim 1, wherein the sensor is an RF corona antenna.

13. The method of claim 1, wherein the sensor is a sulfur hexafluoride gas sensor.

14. The method of claim 1, wherein the sensor is an infrared sensor.

15. The method of claim 1, wherein the sensor is a LIDAR imager.

16. The method of claim 1, wherein the sensor is a LADAR imager.

17. The method of claim 1, wherein the sensor is an acoustic pole rot sensor.

18. The method of claim 1, wherein the sensor is a laser rangefinder.

19. The method of claim 1, wherein the sensor is an intertial measurement unit.

20. The method of claim 1, wherein the sensor is a differentially corrected global positioning system.

21. The method of claim 1, wherein the sensor is a precision clock.

22. The method of claim 1, further comprising the step of analyzing the digitally reduced data stream to identify occurrences of a certain data parametric therein.

23. The method of claim 22, wherein the data parametric is vegetative encroachment into the target object.

24. The method of claim 22, wherein the data parametric is structural defects within the target object.

25. The method of claim 22, wherein the data parametric is structural elements missing from the target object.

26. The method of claim 22, wherein the data parametric is change in structural elements within the target object over a period of time.

27. The method of claim 22, wherein the data parametric is emission of sulfur hexafluoride gas from the target object.

28. The process of claim 22, wherein the data parametric is temperature.

29. The method of claim 1, wherein the creation of the digitally reduced data stream from the continuous stream of data further comprises the steps of:

a) selecting a first segment of the continuous stream of data;

b) selecting a first discrete piece of data from the first segment, to represent the first segment of continuous stream of data;

c) selecting a second segment of the continuous stream of data; and

d) selecting a second discrete piece of data from the second segment to represent the second segment of continuous stream of data.

30. The method of claim 23, wherein the second discrete piece of data overlaps the first discrete piece of data.

31. A method of inspecting a power corridor for defects and environmental conditions, the method comprising the steps of:

a) providing an aircraft, including:

i) a sensor, mounted to the aircraft, designed and configured to record a continuous stream of data as the aircraft traverses a length of the power corridor; and

ii) a global positioning system recorder, mounted to the aircraft, designed and configured to record geo-spatial data that is synchronous to the continuous stream of data;

b) downloading the continuous stream of data to a data processing system;

c) creating a digitally reduced data stream from the continuous stream of data, wherein the digitally reduced data stream contains data processed within the data processing system;

d) analyzing the digitally reduced data stream to identify occurrences of a certain data parametric therein; and

e) generating analyzed imagery and inspection report databases containing the digitally reduced data stream with both the geo-spatial data and the identified data parametric synchronized to the digitally reduced data stream.

32. The method of claim 31, wherein the sensor is a wide field of view camera.

33. The method of claim 31, wherein the sensor is a medium field of view camera.

34. The method of claim 31, wherein the sensor is a narrow field of view camera.

35. The method of claim 31, wherein the sensor is an RF corona antenna.

36. The method of claim 31, wherein the sensor is a sulfur hexafluoride gas sensor.

37. The method of claim 31, wherein the sensor is an infrared sensor.

38. The method of claim 31, wherein the sensor is a LIDAR imager.

39. The method of claim 31, wherein the sensor is a LADAR imager.

40. The method of claim 31, wherein the sensor is an acoustic pole rot sensor.

41. The method of claim 31, wherein the sensor is a laser rangefinder.

42. The method of claim 31, wherein the sensor is an intertial measurement unit.

43. The method of claim 31, wherein the sensor is a differentially corrected global positioning system.

44. The method of claim 31, wherein the sensor is a precision clock.

45. The method of claim 31, wherein the data parametric is vegetative encroachment into the power corridor.

46. The method of claim 31, wherein the data parametric is structural defects within the power corridor.

47. The method of claim 31, wherein the data parametric is structural elements missing from the target object.

48. The method of claim 31, wherein the data parametric is change in structural elements within the target object over a period of time.

49. The method of claim 31, wherein the data parametric is emission of sulfur hexafluoride gas from the target object.

50. The process of claim 31, wherein the data parametric is temperature.

51. A system architecture for capturing and processing physical data to show discrete defects found within a target object, comprising:

a) a sensor, designed and configured to be mounted to a vehicle and to collect the physical data about the target object;

b) a sensor control system, integrally connected to the sensor, designed and configured to control the sensor;

c) a data processing system, integrally connected to the sensor control system, designed and configured to receive the physical data from the sensor control system and to synchronize the physical data into a geo-spatially organized format;

d) a digitally reduced data stream, derived from the physical data within the data processing system, designed and configured to retain multiple frame rates for distinct subsets of the physical data;

e) a data analysis system, designed to receive the digitally reduced data stream, and configured to identify defects and anomalies within the target object; and

f) a set of analyzed imagery data and inspection reports, generated by the data analysis system that correspond with the digitally reduced data stream and identified defects and anomalies within the target object.

52. The system architecture of claim 51, wherein the sensor is a wide field of view camera.

53. The system architecture of claim 51, wherein the sensor is a medium field of view camera.

54. The system architecture of claim 51, wherein the sensor is a narrow field of view camera.

55. The system architecture of claim 51, wherein the sensor is an RF corona antenna.

56. The system architecture of claim 51, wherein the sensor is a sulfur hexafluoride gas sensor.

57. The system architecture of claim 51, wherein the sensor is an infrared sensor.

58. The system architecture of claim 51, wherein the sensor is a LIDAR imager.

59. The system architecture of claim 51, wherein the sensor is a LADAR imager.

60. The system architecture of claim 31, wherein the sensor is an acoustic pole rot sensor.

61. The system architecture of claim 51, wherein the sensor is a laser rangefinder.

62. The system architecture of claim 51, wherein the sensor is an intertial measurement unit.

63. The system architecture of claim 51, wherein the sensor is a differentially corrected global positioning system.

64. The system architecture of claim 51, wherein the sensor is a precision clock.

65. The system architecture of claim 51, wherein the environmental condition is vegetative encroachment into the target object.

66. The system architecture of claim 51, wherein the defect is a structural defect within the target object.

67. The system architecture of claim 51, wherein the anomaly is a missing structural element from the target object.

68. The system architecture of claim 51, wherein the anomaly is a change in structural elements within the target object over a period of time.

69. The system architecture of claim 51, wherein the anomaly is an emission of sulfur hexafluoride gas from the target object.

70. The system architecture of claim 51, wherein the anomaly is temperature.